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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Trevino et al.  
Serial No. : 09/683,130  
Filed : 11/21/2001  
For : Method and Apparatus for Prescribing an Imaging Scan  
and Determining User Input Validity  
Group Art No. : 2621  
Examiner : Lavin, C.

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## CERTIFICATION UNDER 37 CFR 1.8(a) and 1.10

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APPEAL BRIEF PURSUANT TO 37 C.F.R. §§1.191 AND 1.192

Dear Sir:

This Appeal Brief is being filed in furtherance of the Notice of Appeal filed on October 07, 2005.

**1. REAL PARTY IN INTEREST**

The real party in interest is General Electric Company, the Assignee of the above-referenced application by virtue of the Assignment to General Electric Company, recorded on April 20, 2004, at real 016212, frame 0534.

**2. RELATED APPEALS AND INTERFERENCES**

Appellant is unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellant's legal representative in this Appeal. General Electric Company, the Assignee of the above-referenced application, as evidenced by the documents mentioned above, will be directly affected by the Board's decision in the pending appeal.

**3. STATUS OF THE CLAIMS**

Claims 1–31 are currently pending. Outstanding final rejections remain with respect to claims 1-31 and, thus, are the subject of this appeal.

**4. STATUS OF AMENDMENTS**

Appellant filed several amendments to the claims following the Final Office Action Mailed June 7, 2005. However, none of those amendments have been entered. As such, the claims now pending correspond to those, as amended, on March 3, 2005.

**5. SUMMARY OF CLAIMED SUBJECT MATTER**

A method of guiding prescription of a medical imaging scan is disclosed. The method includes launching an imaging application (100) and determining a plurality of scan parameters (186-192, 274-278) for the imaging application (100). Specification, ¶ 7. The method further includes receiving a scan parameter input (352-356, 394-398, 410-414, 424-430, 440-446), comparing a scan parameter input (352-356, 394-398, 410-414, 424-430, 440-446) to a reference value, and determining a state of validity of a number of remaining scan parameters (186-192, 274-278). Id. at ¶¶ 7, 168, 170-173; Figs. 17-21. The method also includes notifying a user of if any state of validity is out of a predefined range for the scan parameter input (352-356, 394-398, 410-414, 424-430, 440-446)

before updating the number of remaining scan parameters (186-192, 274-278). Id. at ¶¶ 7, 162, 164-165; Figs. 17-21.

A method of prescribing imaging data acquisition of a subject is also disclosed. The method includes (A) receiving a user input to initiate a scan session (100) and (B) determining a plurality of scan parameters (186-192, 274-278) specific to a scan session (100). Id. at ¶¶ 7, 8, 40. The method also includes (C) hierarchically prioritizing the plurality of scan parameters (186-192, 274-278) for the scan session (100). Id. at ¶ 8. The method further includes (D) repeating steps (A) and (B) for a new scan session (100) and (E) re-prioritizing the plurality of scan parameters (186-192, 274-278) for another scan session (100). Id. at ¶ 8.

A computer readable medium (28, 30) having stored thereon a computer program representing a set of instructions that when executed by a computer (20) causes the computer (20) to accomplish a number of tasks is also disclosed. The instructions cause the computer (20) to display a graphical user interface (GUI) (100) configured to assist in prescription of a medical imaging session. Id. at ¶ 9. The instructions further cause the computer (20) to display a window (184) on the GUI (100) upon receipt of a selection command wherein the window (184) is configured to display a number modifiable scan parameters (186-192, 274-278). Id. The instructions then cause the computer (20) to receive a command to modify a scan parameter (186-192, 274-278) and modify the scan parameter (186-192, 274-278). Id. The computer (20) is then caused to determine at least one effect of modifying the scan parameter (186-192, 274-278) on another scan parameter (186-192, 274-278) and display the at least one effect on the GUI (100) prior to modification of the another scan parameter (186-192, 274-278). Id. at ¶¶ 9, 162, 164-165.

A medical imaging system is also disclosed and configured to initiate an imaging application (100) and acquire imaging data of a subject and reconstruct an image of the subject. Id. at ¶¶ 10. The system includes a console (12) configured to facilitate prescribing of a medical imaging scan. Id. The system also includes a computer (20) programmed to display a plurality of tabs (340-350) on the console (12) wherein each tab (340-350) corresponds to a specific task of the imaging application (100). Id. The computer (20) is further programmed to detect a user selection of one of the plurality of

tabs (340-350) and display on the console (12) a plurality of options (352-356, 394-398, 410-414, 424-430, 440-446) associated with the selected tab (340-350). Id. The computer is then programmed to detect user modification of at least one of the plurality of options (352-356, 394-398, 410-414, 424-430, 440-446) and display on the console (12) if there is any consequence of modifying the at least one of the plurality of options (352-356, 394-398, 410-414, 424-430, 440-446) on another option (352-356, 394-398, 410-414, 424-430, 440-446) before modifying the another option (352-356, 394-398, 410-414, 424-430, 440-446). Id. at ¶¶ 10, 162, 164-165.

## 6. **GROUNDS OF REJECTION**

Claims 9-18 stand rejected under 35 U.S.C. §102(e) as being anticipated by Wu et al. (6,687,527; hereinafter Wu). Claims 1-8 and 19-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wu in view of Gaertner (5,680,560). Claims 25-31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wu in view of Gaertner and Seybold (5,877,758). Claims 1-31 are currently under final rejection and, thus, are the subject of this appeal.

## 7. **ARGUMENT**

### **REJECTION UNDER 35 U.S.C. §102(e) OVER WU:**

The Examiner rejected claims 9-18 under 35 U.S.C. §102(e) as being anticipated by Wu. Office Action, June 7, 2005, pg. 2.

#### **CLAIM 9:**

Claim 9 calls for, in part, determining a plurality of scan parameters specific to a scan session and hierarchically prioritizing the plurality of scan parameters for the scan session. The Examiner has asserted that Wu discloses that a “user selects a template that corresponds to what type of scan shall be performed; this selection determines which parameters are most important (highest priority) and which are less important.” Id. The Examiner further asserted that “after receiving the user’s selection a plurality of scan parameters is determined.” Id. Appellant respectfully disagrees that Wu anticipates claim 9. As stated in MPEP §2131, “A claim is anticipated only if each and every

element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

Wu teaches that a user can select a desired scan parameter set from a data repository available in a master database memory. See col. 13, lns. 58-67. The master database memory may contain only a single sequence of scan parameters or a plurality of sequences pre-designed or stored from previous imaging sessions. See col. 14, lns. 28-37. Wu teaches that "[t]he user selects a sequence in a step 504, whereupon the sequence parameters are retrieved from the database memory." Col. 14, lns. 20-22. Wu further teaches that "[p]referably, an entire set of values for the selectable parameters that govern the operation of the MRI apparatus are retrieved, as opposed to retrieving only values for those parameters included in the sub-set of selectable parameters that are displayed in the first display area 100." Col. 14, lns. 22-27.

Wu teaches calculating minimum and maximum limit values for each selectable parameter and calculating values for monitor parameters. See col. 14, lns. 42-48. Wu, however, fails to teach hierarchical prioritization of the sequence parameters as called for in claim 9. As stated above, the Examiner concluded that it is the user selection of a parameter template that "determines which parameters are most important (highest priority) and which are less important." Office Action, June 7, 2005, pg. 2. Applicant respectfully disagrees that the user selection prioritizes the selectable parameters. A user selection of one parameter sequence over another parameter sequence does not hierarchically prioritize the parameters within the sequence. At best, the user selection identifies the values of one parameter sequence to be used instead of the values of other parameter sequences, but the parameters within the selected parameter sequence are not hierarchically prioritized by the user selection of a particular sequence as the Examiner concluded. One skilled in the art would recognize that selecting one sequence out of a plurality of sequences determines which set of values to use for the parameter sequence, but the scan parameters themselves are not prioritized by that selection.

For at least these reasons, claim 9 is believed to be patentably distinct from the art of record. Appellant believes claims 10-18 are in condition for allowance at least pursuant to the chain of dependency. However, since Appellant believes claim 12 includes subject matter that is additionally distinguishable from the art of record,

Appellant will specifically address that which is patentably distinct above and beyond the allowability of the claim pursuant to the chain of dependency.

**CLAIM 12:**

In the Office Action, the Examiner determined that Wu discloses fixed parameters, selectable parameters, and monitor parameters and equated the same to a set of primary scan parameters, a set of secondary scan parameters, and a set of tertiary scan parameters, respectively, as called for in claim 10. Office Action, June 7, 2005, pg. 3. Claim 12 further defines claims 9 and 10 wherein a change to one of the set of tertiary scan parameters may affect another of the set of tertiary scan parameters, but not affect any of the set of secondary scan parameters and any of the set of primary scan parameters. In the rejection of claim 12, the Examiner stated that “[t]he user cannot directly change the tertiary scan parameters so these parameters cannot affect the primary or secondary scan parameters.” Id.

Applicant agrees that Wu fails to teach that a user can directly change a tertiary scan parameter. Wu et al. teaches that the monitor parameters “are calculated by the user interface processor 60 from the selectable parameters.” Col. 10, lns. 41-43. Wu et al. further teaches that the monitor parameters are “changed indirectly in response to new values of the underlying selectable parameters.” Col. 10, lns. 43-47. In addition, Wu et al. teaches that the monitor parameters “are preferably not directly modifiable by the user.” Id.

In contrast, claim 12 establishes that a change to one of the set of tertiary scan parameters may affect another of the set of tertiary scan parameters, but not affect any of the set of secondary scan parameters and any of the set of primary scan parameters. Therefore, a change to a tertiary scan parameter may affect another tertiary scan parameter. In the Advisory Action mailed August 25, 2005, the Examiner stated that he “has interpreted ‘may’ as optional language.” Advisory Action, Aug. 25, 2005, pg. 2. The Examiner further stated, “Thus ‘may’ can be construed to read ‘may or may not.’” Id. The Examiner then reiterated that “the tertiary parameters cannot directly be changed and therefore changes to one parameter cannot affect another set of tertiary parameters.” Id.

Applicant disagrees that the term “may” is optional language and that “may” can be interpreted as “may not”. The Examiner provided no support for such an interpretation. “May” is defined as “to be allowed or permitted to.” See Definition of MAY, The American Heritage Dictionary, Second College Ed., Houghton Mifflin Company (Boston, 1992), p. 774. One skilled in the art would recognize that the definition does not define “may” as “to be allowed or permitted to or not to be allowed or permitted to” as the Examiner has construed the term. The Examiner’s construing of the term “may” to read “may or may not” construes claim 12 to read, for example, that a change to one of the set of tertiary scan parameters is allowed to or is not allowed to affect another of the set of tertiary scan parameters, but not affect any of the set of secondary scan parameters and any of the set of primary scan parameters. Such is not called for in claim 12. Instead, claim 12 calls for a change to one of the set of tertiary scan parameters is allowed to affect another of the set of tertiary scan parameters, but not affect any of the set of secondary scan parameters and any of the set of primary scan parameters. The claim requires the ability to so perform. There is nothing indefinite about an ability to perform as such. There is no support for construing “may” as used in claim 12 to include that a change to one of the set of tertiary scan parameters is allowed to or is not allowed to affect another of the set of tertiary scan parameters. Such construction is not called for in claim 12 and is improper.

Since the Examiner concluded that the prior art teaches that changes to one parameter cannot affect another set of tertiary parameters as stated above, a change to a tertiary parameter as taught in Wu is not allowed to affect another of the set of tertiary parameters. As stated above, such is contrary to that called for in claim 12. That is, while the prior art does not allow a change to a tertiary parameter to affect another tertiary parameter, claim 12 unequivocally allows a change to a tertiary parameter to affect another tertiary parameter.

Since claim 12 allows a change to one tertiary parameter to affect another of the set of tertiary parameters and since the prior art does not allow a change to one tertiary parameter to affect another of the set of tertiary parameters, the prior art fails to teach that called for in claim 12. For at least these reasons, claim 12 is believed to be patentably distinct from the art of record.

**REJECTION UNDER 35 U.S.C. §103(a) OVER WU IN VIEW OF GAERTNER:**

The Examiner finally rejected claims 1-8 and 19-24 under 35 U.S.C. §103(a) as being unpatentable over Wu in view of Gaertner stating in each rejection that:

Wu however does not disclose alerting the user that the state of validity is out of range for any of the parameters before updating the remaining scan parameters.

Gaertner discloses (col. 7, lines 25-32) that the user is alerted that the state of validity is out of range when one parameter is changed.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to alert the user before taking action (as taught by Gaertner) in the method disclosed by Wu. Alerting the user before taking action would give the user a chance to take his or her own corrective steps before letting the method make the correction decisions, this could speed up the process of finalizing parameter selection.

Office Action, June 7, 2005, pgs. 6, 9.

The Examiner has improperly rejected the claims 1-8 and 19-24. The Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under §103(a) of Chapter 35 of the United States Code.

Contrary to the Examiner's assertion, Appellant respectfully disagrees that the art of record supports a 35 U.S.C. §103(a) rejection of the present claims. The burden of establishing a *prima facie* case of obviousness falls on the Examiner. MPEP §2142. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination.

ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes each and every element of the claimed invention, but also provide "a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). That is, "[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art." MPEP §2143.01. "The fact that references can be combined or modified is not sufficient to establish *prima*

facie obviousness." Id. (emphasis added). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. Uniroyal Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2143. Appellant believes that a prima facie case of obviousness cannot be made based on the art of record because, as will be shown below, (I) the references are directed to different purposes and, therefore, there is no motivation to combine these references in a way done so by the Examiner, other than Appellant's own teaching; (II) the combination would not have a reasonable expectation of success because the combination would not result in the same, or even a similar system, as that presently claimed; and (III) all the elements of the present claims are not present in the references. The Examiner, as will be shown below, has failed to establish each of the three separate and distinct criteria necessary to support a §103(a) rejection.

### **CLAIM 1:**

Claim 1 calls for, in part, comparing the scan parameter input to a reference value, determining a state of validity of a number of remaining scan parameters, and notifying a user of whether any state of validity is out of a predefined range for the scan parameter input before updating the number of remaining scan parameters. That is, the user is notified that determined states of validity of the number of remaining scan parameters are out of a predefined range before the number of remaining scan parameters is updated. In this manner, the states of validity of the number of remaining scan parameters are calculated before the number of remaining scan parameters is updated.

#### **(I) Lack of motivation to combine references:**

Wu discloses an MRI apparatus operator guidance system that "calculates monitor parameters and limit values for selectable parameters." Abstract. Wu discloses calculating a desirability factor function and obtaining optimized values for a "plurality of MRI operating parameters through analysis of the desirability factor function." Col. 2, lns. 37-41. Wu further discloses receiving initial values for a plurality of MRI operating parameters; calculating limit values corresponding thereto; "calculating values for a set of monitor parameters; displaying values of a sub-set of the MRI operating parameters; displaying the limit values for the sub-set of MRI operating parameters; and displaying the calculated monitor parameter values." Col. 3, lns. 10-17.

Wu relates to "user interfaces for clinical imaging systems." Col. 1, lns. 9-11. Wu states that "[t]ypically, the first user input after loading a sequence from memory 68 will be the entering of a new selectable parameter value." Col. 15, lns. 1-3. The new parameter value is then "verified to be within the minimum and maximum limits." Col. 15, lns. 3-5. Wu teaches that the system updates the parameter value upon receiving an acceptable value, calculates and updates any changed parameter limits and monitor parameter values affected by the changed selectable parameter, and reformats the display areas. See col. 15, lns. 23-29. Wu further states that "[b]y reviewing the monitor parameters and/or selected operating curves in the second display area 200, 300, 400, 420 after the step 510 recalculates the monitor parameter values to reflect the changed selectable parameter value, the user easily recognizes the effect of the change." Col. 15, lns. 35-39. After the user recognizes the effect of the change, if "the change produces undesired effects, the user advantageously operates an 'undo' option selectable for example by an 'Undo Last Change' button 144 (FIG. 2A) in the first display area. Col. 15, lns. 39-44.

Unrelated to Wu, Gaertner relates to "a single control for changing a plurality of parameter ranges." Col. 1, lns. 11-13. Gaertner teaches a GUI that "allows the simultaneous setting of ranges for two parameters by manipulating the control element via the mouse or other pointing device." Col. 5, lns. 54-56. Gaertner teaches that the two parameters are typically the passage of time and "a range of a parameter which varies with time such as speed, temperature, amount of disk spaced (sic) used, CPU utilization and so forth." Col. 4, lns. 57-64. The ranges "may be used as part of a monitoring

program which would then take actions based on satisfying these ranges, e.g., alerting users that these parameter ranges were satisfied." Col. 7, Ins. 5-8.

In order to support a rejection under 35 U.S.C. §103(a), "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." MPEP §2142. However, not only is there no motivation to combine the references within the references themselves, but the knowledge available to one of ordinary skill in the art also lacks motivation to combine the references. As stated above, the Examiner stated that it would have been obvious to one having ordinary skill in the art to alert the user before taking action. Office Action, June 7, 2005, pg. 6. The Examiner further stated that "[a]lerting the user before taking action would give the user a chance to take his or her own corrective steps before letting the method make the correction decisions, this could speed up the process of finalizing parameter selection." Office Action, June 7, 2005, pg. 6.

As stated above, Wu discloses an "undo" option to undo the change that produces undesired effects on changed parameters. Also, as stated above, Gaertner teaches alerting a user that parameter ranges have been satisfied. Neither reference teaches notifying a user of whether any state of validity is out of a predefined range for the scan parameter input before updating the number of remaining scan parameters. The fact that the claims call for the notification before further updates is significant in that it not only saves the user time, but is also predictive, rather than the reactive nature of the references. As such, one skilled in the art would not be motivated to combine the references to produce the claimed invention. Furthermore, one skilled in the art would not be motivated to combine the references other than the hindsight gained from the invention itself.

## **(II) Lack of reasonable expectation of success:**

The second independent element required to support a 35 U.S.C. §103(a) rejection is that there must be a reasonable expectation of success in combining the references. MPEP §2142. There is no such reasonable expectation of success in the present case. Claim 1 calls for, in part, notifying a user of whether any state of validity is out of a predefined range for the scan parameter input before updating the number of remaining scan parameters. First, the system of Wu recalculates the monitor parameter values to

reflect a changed selectable parameter value so that a user may easily recognize the effect of the change. If the effect of the changed, or updated, selectable parameter value is undesired, the user may undo the selectable parameter change to return to a previous selectable parameter value. Second, the method of Gaertner may be used to alert a user that parameter ranges have been satisfied. Thus, a combination of Wu in view of Gaertner may produce a system that alerts a user that the recalculated monitor parameter values have been satisfied, but only after the monitor parameters are recalculated and updated. Such is contrary to notifying a user of whether any state of validity is out of a predefined range for the scan parameter input before updating the number of remaining scan parameters as called for in claim 1.

**(III) Lack of references teaching, showing, or disclosing all the elements of the present claims:**

Claim 1 calls for, in part, determining a state of validity of a number of remaining scan parameters and notifying a user of whether any state of validity is out of a predefined range for the scan parameter input before updating the number of remaining scan parameters. The Examiner stated that Wu “does not disclose alerting the user that the state of validity is out of range for any of the parameters before updating the remaining scan parameters” and that “Gaertner discloses (col. 7, lines 25-32) that the user is alerted that the state of validity is out of range when one parameter is changed.” Office Action, June 7, 2005, pg. 6. Applicant respectfully disagrees that Gaertner discloses that the user is alerted that the state of validity is out of range when one parameter is changed.

Gaertner discloses setting parameter ranges that “may be used as part of a monitoring program which would then take actions based on satisfying these ranges, e.g., alerting users that these parameter ranges were satisfied.” Gaertner, col. 7, lines 5-24. Gaertner discloses a state machine in Fig. 7 that determines whether conditions are met. See Id. The home state of the state machine is the initial state and remains the current state “[a]s long as ‘D’ is not in the range. . . .” Id. If “D” enters the specified range, then the current state of the state machine moves to the monitor state. See Id. Once in the monitoring state, “[i]f ‘D’ exits the range before the allotted time interval has been satisfied, state machine returns along path 405 to the home state 400.” Id. If both “D” and “T” are satisfied “the state machine returns to home state along path 407, where the

threshold structure and the values of ‘T’ and ‘D’ are sent to the monitoring module and the timer is stopped.” Id. Gaertner teaches that “[o]nce the state machine determines that the range is satisfied, the monitoring program handles the determination of the actual alarms based on the relationships which the range may have with other ranges.” Col. 7, lines 25-32. (emphasis added). If an “and” relationship exists between a first and a second range, “the monitoring program would look to a second state machine to determine whether the range conditions of a second set of parameters were satisfied before alerting users or taking other actions.” Id.

Thus, Gaertner teaches that a first parameter, “D”, is monitored after satisfying a first range, and a second parameter, “T”, is monitored as long as “D” remains within the range. If “D” exits the range before “T” is satisfied, the current state of the state machine returns to the home state. Gaertner does not teach or suggest that the monitoring program receives the threshold structure and the values of “T” and “D” upon a return to the home state before “T” is satisfied. Rather, Gaertner only teaches that the monitoring program receives the threshold structure and the values of “T” and “D” “if ‘D’ stays within the range and time ‘T’ is satisfied.” Col. 7, lines 5-24. Therefore, once “D” and “T” are determined to be satisfied, the monitoring program receives their values and the threshold structure.

For the monitoring program to receive the values of “D” and “T”, the ranges set for each must be satisfied. That is, “D” must have a valid range value for the duration of “T” for the monitoring program to receive their values. Therefore, if “D” has a valid range when the monitoring program receives its value, “D” is not out of a predefined range. In fact, “D” is within a predefined range. Such is contrary to that called for in claim 1. Claim 1 calls for notifying a user of whether any state of validity is out of a predefined range for the scan parameter input before updating the number of remaining scan parameters. Gaertner fails to teach sending the value of “D” to the monitoring program if “D” exits the range before “T” is satisfied. Therefore, since the monitoring program does not receive an input that “D” is out of a predefined range, an alarm controlled by the monitoring program is not activated, and a user is not so notified.

Furthermore, even if the monitoring program was to receive an indication that “D” had exited the range before “T” was satisfied, there is no teaching or suggestion that

the state machine in Gaertner monitors the value of “D” before “D” is updated. It would be obvious to one skilled in the art that when the state machine determines that “D” is within or not within the specified range, “D” has already been updated to its current value. That is, the state machine reacts to changes in the monitored parameters after the monitored parameter values have been updated and does not react to predictions or calculations of future parameter values. Since the updated value of “D” is monitored by the state machine, Gaertner does not teach notifying a user if any state of validity is out of a predefined range for the scan parameter input before updating the number of remaining scan parameters.

For all the reasons set forth above, Appellant believes that the art of record fails to establish each requirement, as required under MPEP §2142, of substantiating a 35 U.S.C. §103(a) rejection of claim 1. As the art of record lacks the motivation to combine the references in the manner done by the Examiner, lacks a reasonable likelihood of success, and fails to teach or suggest each and every element of claim 1, Appellant believes claim 1, and those claims that depend therefrom, are patentably distinct over the art of record. Appellant believes claims 2-8 are in condition for allowance at least pursuant to the chain of dependency.

#### **CLAIM 19:**

Claim 19 calls for, in part, a computer readable medium having stored thereon a computer program representing a set of instructions that when executed by a computer causes the computer to modify a scan parameter, determine at least one effect of modifying the scan parameter on another scan parameter, and display an indication of the at least one effect on the GUI prior to modification of the another scan parameter.

Again, the burden of establishing a *prima facie* case of obviousness falls on the Examiner. MPEP §2142. To establish a *prima facie* case, the Examiner must show (I) there is a suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine the reference teachings, (II) a reasonable expectation of success, and (III) the references must teach or suggest all the claim limitations. MPEP §2142. Again, Appellant does not believe that the Examiner has met each or any of the criteria required to establish a *prima facie* case of obviousness as required under MPEP §2142.

**(I) Lack of motivation to combine references:**

Again, in order to support a 35 U.S.C. §103(a) rejection, the references must contain the requisite motivation to combine the references. MPEP §2142. Notwithstanding the reference's failure to teach or suggest each and every element of claim 19 as will be discussed further below, the art of record fails to provide a motivation to combine the references. Additionally, as stated in MPEP §2143.01, "the level of skill in the art cannot be relied upon to provide the suggestion to combine references." MPEP §2143.01. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999). As previously argued with respect to claim 1, Gaertner teaches notifying a user that a parameter has satisfied both time and range values. Also, Gaertner fails to teach notifying the user that the parameter has satisfied both time and range values prior to modification of the parameter. As such, there is no motivation for the method of Gaertner to display an indication of at least one effect of modifying a scan parameter on another scan parameter on the GUI prior to modification of the another scan parameter. Furthermore, the art of record fails to teach or suggest each and every element of claim 19 as will be discussed further below.

As such, one skilled in the art would not be motivated to combine the references to produce the claimed invention as the Examiner has done.

**(II) Lack of reasonable expectation of success:**

As previously argued with respect to claim 1, a reasonable combination of Wu and Gaertner results in nothing more than displaying effects of parameter modification after the parameter has been modified. The present invention, as defined in claim 19, calls for displaying an indication of at least one effect of modifying a scan parameter on another scan parameter on a GUI prior to modification of the another scan parameter. As previously argued with respect to claim 1, any combination of Wu and Gaertner does not yield the advantages or success of the present invention. Simply, the combination results in a display of modified parameter effects after the parameter has been updated.

**(III) Lack of references teaching, showing, or disclosing all the elements of the present claims:**

Referring to the argument with respect to claim 1, the art of record fails to teach or suggest displaying an indication of at least one effect of modifying a scan parameter

on another scan parameter on a GUI prior to modification of the another scan parameter. As stated above, the Examiner stated and Applicant agrees that Wu does not disclose alerting a user the a state of validity is or of range for any parameter before updating the remaining scan parameters. The Examiner, however, further concluded that Gaertner discloses that a user is alerted that a state of validity is out of range when one parameter is changed. Applicant respectfully disagrees.

Gaertner teaches monitoring parameters based on threshold ranges. See col. 7, lns 5-60; Figure 7. Gaertner teaches that a state machine is used to determine whether conditions are met. Id. The state machine only determines whether conditions are met after parameter values have been changed. That is, Gaertner fails to teach or suggest that the state machine determines valid parameter conditions before the parameter values are updated or modified. Instead, the state machine merely monitors parameter values that have been modified. Furthermore, Gaertner fails to teach or suggest that the monitoring program displays an alert to a user prior to modification of any parameter value. Any user display or alert displayed by the monitor program of Gaertner only includes parameter values that have been modified.

For all the reasons set forth above, Appellant believes that the art of record fails to establish each requirement, as required under MPEP §2142, of substantiating a 35 U.S.C. §103(a) rejection of claim 19. As the art of record lacks the motivation to combine the references in the manner done by the Examiner, lacks a reasonable likelihood of success, and fails to teach or suggest each and every element of claim 19, Appellant believes claim 19, and those claims that depend therefrom, are patentably distinct over the art of record. Accordingly, Appellant requests favorable action over the rejection of claims 19-24 over Wu in view of Gaertner.

**REJECTION UNDER 35 U.S.C. §103(a) OVER WU IN VIEW OF**  
**SEYBOLD AND GAERTNER:**

The Examiner finally rejected claims 25-31 under 35 U.S.C. §103(a) as being unpatentable over Wu in view of Seybold and Gaertner stating, “Wu does not disclose the use of tabs in the GUI. Wu also does not disclose alerting the user that the state of

validity is out of range for any of the parameters before updating the remaining scan parameters.” Office Action, June 7, 2005, pg. 11. The Examiner also stated:

Gaertner discloses (col. 7, lines 25-32) that the user is alerted that the state of validity is out of range when one parameter is changed.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to alert the user before taking action (as taught by Gaertner) in the method disclosed by Wu. Alerting the user before taking action would give the user a chance to take his or her own corrective steps before letting the method make the correction decisions, this could speed up the process of finalizing parameter selection.

Office Action, June 7, 2005, pg. 11.

#### **CLAIM 25:**

Claim 25 calls for, in part, a computer programmed to detect user modification of at least one of a plurality of options and display on a console if there is any consequence of modifying the at least one of the plurality of options on another option before modifying the another option.

Again, the burden of establishing a *prima facie* case of obviousness falls on the Examiner. MPEP §2142. To establish a *prima facie* case, the Examiner must show (I) there is a suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine the reference teachings, (II) a reasonable expectation of success, and (III) the references must teach or suggest all the claim limitations. MPEP §2142. Again, Appellant does not believe that the Examiner has met each or any of the criteria required to establish a *prima facie* case of obviousness as required under MPEP §2142.

##### **(I) Lack of motivation to combine references:**

While the Examiner stated that it would have been obvious to one having ordinary skill in the art at the time of the invention to alert the user before taking action (as taught by Gaertner) in the method disclosed by Wu to give the user a chance to take his or her own corrective steps before letting the method make the correction decisions, this could speed up the process of finalizing parameter selection, such is not taught in Gaertner. That is, as previously argued with respect to claims 1 and 19 and as argued below, Gaertner does not teach alerting a user before taking action. Instead, in the case where an “and” relationship exists between a first and a second range, “the monitoring program would look to a second state machine to determine whether the range conditions of a

second set of parameters were satisfied before alerting users or taking other actions.” Gaertner, col. 7, lines 25-32. Thus, Gaertner does not teach alerting a user before taking action as the Examiner has concluded. Instead, Gaertner teaches alerting a user or taking other actions after determining whether the range conditions of a second set of parameters are satisfied.

Since Gaertner fails to teach alerting a user before taking action, the Examiner has not “present[ed] a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” MPEP §2142.

**(II) Lack of reasonable expectation of success:**

Seybold relates to “changing multiple parameters of a timescale presented by a graphical user interface by operation of a slider control.” Col. 1, lns. 6-10. Using the slider control “avoids the need for a user to use a dialog to select desired timescale parameters because the control operation for varying these parameters is presented to the user in a single control device.” Col. 2, lns. 44-48. Seybold further teaches a “computer-implemented system controlling multiple parameters of a display item, such as a timescale, to vary the appearance of the display item by a user interface for a computer program.” Col. 4, lns. 61-65.

A combination of Wu, Seybold and Gaertner fails to result in a computer programmed to display on a console if there is any consequence of modifying at least one of a plurality of options on another option before modifying the another option. As previously argued with respect to claims 1 and 19, a reasonable combination of Wu and Gaertner results in nothing more than displaying effects of parameter modification after the parameter has been modified. The present invention, as defined in claim 25, calls for displaying on a console if there is any consequence of modifying at least one of a plurality of options on another option before modifying the another option. As previously argued with respect to claims 1 and 19, any combination of Wu and Gaertner does not yield the advantages or success of the present invention. Simply, the combination results in a display of modified parameter effects after the parameter has been updated.

**(III) Lack of references teaching, showing, or disclosing all the elements of the present claims:**

Referring to the argument with respect to claims 1 and 19, the art of record fails to teach or suggest a computer programmed to detect user modification of at least one of a plurality of options and display on a console if there is any consequence of modifying the at least one of the plurality of options on another option before modifying the another option.

As stated above, Wu does not disclose alerting a user that a state of validity is out of range for any parameter before updating the remaining scan parameters. Similarly, Wu fails to disclose displaying on a console if there is any consequence of modifying at least one of a plurality of options on another option before modifying the another option.

Also as stated above, Gaertner teaches a monitoring program that may alert a user that parameter ranges have been satisfied; however, the parameter ranges are monitored after they have been updated. That is, a state machine determines the satisfaction of a range value and a time duration value with respect to threshold limits only after the values have been modified. Thus, the state machine is taught to react to modified parameter values, and any alert displayed to a user includes only post-modified parameter values.

Seybold, as stated above, teaches a “computer-implemented system controlling multiple parameters of a display item, such as a timescale, to vary the appearance of the display item by a user interface for a computer program.” Col. 4, Ins. 61-65. Seybold is silent on displaying consequences of modifying any option on another option before modifying the another option. As such, none of the references, singly or in combination, overcomes the lack of in teaching, showing, or disclosing all the elements of the present claims.

For all the reasons set forth above, Appellant believes that the art of record fails to establish each requirement, as required under MPEP §2142, of substantiating a 35 U.S.C. §103(a) rejection of claim 25. As the art of record lacks the motivation to combine the references in the manner done by the Examiner, lacks a reasonable likelihood of success, and fails to teach or suggest each and every element of claim 25, Appellant believes claim 25, and those claims that depend therefrom, are patentably distinct over the art of

record. Accordingly, Appellant requests favorable action over the rejection of claims 25-31 over Wu in view of Seybold and Gaertner.

### **CONCLUSION**

In view of the above remarks, Appellant respectfully submits that the Examiner has provided no supportable position that claims 1-316 are not patentable. Appellant believes that each claim is directed to statutory subject matter and defines over the art of record.

### **General Authorization for Extension of Time**

In accordance with 37 C.F.R. §1.136, Appellant hereby provides a general authorization to treat this and any future reply requiring an extension of time as incorporating a request therefore. The Office is authorized to charge Deposit Account No. 07-0845 for any fee deficiency.

Respectfully submitted,

/Kent L. Baker/

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Dated: December 7, 2005  
Attorney Docket No.: GEMS8081.107

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**CLAIMS APPENDIX**

1. (Previously Presented) A method of guiding prescription of an medical imaging scan, the method comprising:

    launching an imaging application;  
    determining a plurality of scan parameters of the imaging application;  
    receiving a scan parameter input;  
    comparing the scan parameter input to a reference value;  
    determining a state of validity of a number of remaining scan parameters;  
    notifying a user of if any state of validity is out of a predefined range for the scan parameter input before updating the number of remaining scan parameters.

2. (Original) The method of claim 1 further comprising determining and suggesting at least one technique for achieving at least one of reduced scan time, increased resolution, increased contrast, increased SNR, and increased coverage.

3. (Original) The method of claim 1 further comprising conveying to the user that the scan parameter input is acceptable.

4. (Original) The method of claim 1 further comprising automatically updating the number of remaining parameters in response to the scan parameter input.

5. (Original) The method of claim 4 wherein notifying further comprises conveying to the user that the remaining number of scan parameters have been automatically updated.

6. (Original) The method of claim 1 further comprising conveying to the user that the scan parameter input causes at least one of the remaining scan parameters to be invalid.

7. (Original) The method of claim 6 further comprising notifying the user of the at least one remaining invalid scan parameter.

8. (Original) The method of claim 6 further comprising prompting the user to either enter a different scan parameter input or update the at least one invalid scan parameter.

9. (Previously Presented) A method of prescribing imaging data acquisition of a subject, the method comprising:

- (A) receiving a user input to initiate a scan session;
- (B) determining a plurality of scan parameters specific to the scan session;
- (C) hierarchically prioritizing the plurality of scan parameters for the scan session;
- (D) repeat steps (A) and (B) for a new scan session; and
- (E) re-prioritizing the plurality of scan parameters for the new scan session.

10. (Previously Presented) The method of claim 9 wherein hierarchically prioritizing includes:

determining a set of primary scan parameters for the scan session;

determining a set of secondary scan parameters for the scan session;

determining a set of tertiary scan parameters for the scan session, wherein a change to one of the set of primary scan parameters may affect at least one of another of the set of the primary scan parameters, one of the set of secondary scan parameters and one of the set of tertiary scan parameters.

11. (Original) The method of claim 10 wherein a change to one of the set of secondary scan parameters may affect at least one of another secondary scan parameters and one of the set of the tertiary scan parameters, but may not affect one of the set of primary scan parameters.

12. (Original) The method of claim 10 wherein a change to one of the set of tertiary scan parameters may affect another of the set of tertiary scan parameters, but not affect any of the set of secondary scan parameters and any of the set of primary scan parameters.

13. (Original) The method of claim 10 further comprising organizing the set of primary scan parameters, the set of secondary scan parameters, and the set of tertiary scan parameters to drive user understanding of physics of the scan session from geometry to timing.

14. (Original) The method of claim 10 further comprising displaying the set of primary scan parameters, the set of secondary scan parameters, and the set of tertiary scan parameters on a graphical user interface.

15. (Original) The method of claim 14 further comprising enabling modification of a displayed scan parameter.

16. (Original) The method of claim 15 further comprising displaying at least one consequence of modifying a scan parameter.

17. (Original) The method of claim 14 further comprising notifying to a user that modification of a scan parameter causes another scan parameter to be invalid.

18. (Original) The method of claim 14 further comprising prompting a user to input a scan parameter value for another scan parameter as a result of the modification of the displayed scan parameter.

19. (Previously Presented) A computer readable medium having stored thereon a computer program representing a set of instructions that when executed by a computer causes the computer to:

display a graphical user interface (GUI) configured to assist prescription of a medical imaging session;

display a window on the GUI upon receipt of a selection command, the window configured to display a number of modifiable scan parameters;

receive a command to modify a scan parameter;

modify the scan parameter;

determine at least one effect of modifying the scan parameter on another scan parameter; and

display an indication of the at least one effect on the GUI prior to modification of the another scan parameter.

20. (Original) The computer readable storage medium of claim 19 wherein the computer program has further instructions to determine if the modification to the scan parameter requires a change to the another scan parameter.

21. (Original) The computer readable storage medium of claim 20 wherein the computer program has further instructions to determine to what value the another scan parameter should be changed and determine if that value is valid.

22. (Original) The computer readable storage medium of claim 21 wherein the computer program has further instructions to automatically change the another scan parameter to the valid value.

23. (Original) The computer readable storage medium of claim 20 wherein the computer program has further instructions to display that the another scan parameter has an invalid value on the GUI.

24. (Original) The computer readable storage medium of claim 20 wherein the computer program has further instructions to prompt a user to modify the another scan parameter.

25. (Previously Presented) A medical imaging system configured to initiate an imaging application and acquire imaging data of a subject and reconstruct a diagnostic image of the subject, the system having:

a console configured to facilitate prescribing of a medical imaging scan;  
and

a computer programmed to:

display a plurality of tabs on the console wherein each tab corresponds to a specific task of the imaging application;

detect a user selection of one of the plurality of tabs;

display on the console a plurality of options associated with the selected tab;

detect user modification of at least one of the plurality of options;

and

display on the console if there is any consequence of modifying the at least one of the plurality of options on another option before modifying the another option.

26. (Original) The medical imaging system of claim 25 wherein the computer is further programmed to determine if the user modification causes a change to a scan parameter, and if so, determine if another scan parameter needs modification.

27. (Original) The medical imaging system of claim 26 wherein the computer is further programmed to determine a value by which to change the another scan parameter.

28. (Original) The medical imaging system of claim 27 wherein the computer is further programmed to determine if the value is valid, and if so, automatically change the another scan parameter to the value, and if not, display a message on the console that the another scan parameter has an invalid value.

29. (Original) The medical imaging system of claim 27 wherein the computer is further programmed to prompt a user to enter a new value for the another scan parameter.

30. (Original) The medical imaging system of claim 25 wherein the plurality of options are enclosed in a window, wherein the window is displayed to the right of the plurality of tabs and wherein the plurality of tabs are vertically oriented.

31. (Original) The medical imaging system of claim 30 wherein the computer is further programmed to display the plurality of tabs and the plurality of options enclosed in the window to facilitate a logical top-bottom and left-right workflow for prescribing a medical imaging scan session.

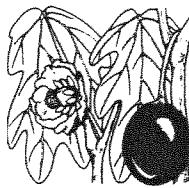
**EVIDENCE APPENDIX**

**Evidence**

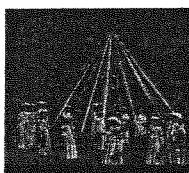
Definition of MAY, *The American Heritage Dictionary, Second College Ed.*, Houghton Mifflin Company (Boston, 1992), p. 774.

**RELATED PROCEEDINGS APPENDIX**

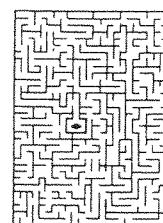
\_\_\_\_--None.



May apple



Maypole



maze

**maxillary** (mák'sí-lär'ë) *n., pl. -ies.* A jaw or jawbone. —*maxillary adj.*

**maxilliped** (mák'sí-lí-péd') *n. Zool.* One of the three pairs of crustacean head appendages located just posterior to the maxillae. [MAXILL(A) + -PED.]

**maxillo-facial** (mák'sí-ló-fá'shäl') *adj.* Pertaining to or involving the maxilla and the face. [MAXILL(A) + FACIAL.]

**maxim** (mák'sim) *n.* A concise formulation of a fundamental principle or rule of conduct; saying. [ME *maxime* < OFr. < Med. Lat. *maxima* < Lat. *maximus*, greatest < *magnus*, great.]

**maxima** (mák'sa-mä) *n.* A plural of **maximum**.

**maximal** (mák'sa-mäl') *adj.* 1. Of, pertaining to, or consisting of a maximum. 2. Being the greatest or highest possible. 3. *Math.* Designating the maximal of an ordered set. —*n.* *Math.* An element in an ordered set that is followed by no other. —*maximal adj.*

**maximalist** (mák'sa-mä-list) *n.* One who advocates direct revolutionary action to secure social and political gains. [Fr. *maximaliste*, prob. < E. *maximal*.]

**maximize** (mák'si-miz') *tr.v. -mized, -mizing, -mizes.*

1. To increase or make as great as possible: *"the ideal of maximizing opportunity through the equalizing of educational opportunity"* (Robert J. Havighurst). 2. To assign the highest possible importance to. 3. *Math.* To find a maximum value of (a function). —*maximality n.* —*maximizer n.*

**maximum** (mák'sa-müm) *n., pl. -mums or -ma (-mä).*

1. a. The greatest possible quantity, degree, or number. b. The time or period during which the highest point or degree is attained. 2. An upper limit stipulated by law or other authority. 3. *Astron.* a. The moment when a variable star is most brilliant. b. The magnitude of the star at such a moment. 4. *Math.* a. The value of a function that is not exceeded by neighboring values. b. The greatest value assumed by a function within some subset of its domain of definition. c. The largest number in a set. —*adj.* 1. Having or being the greatest quantity or the highest degree that has been or can be attained: *maximum temperature*. 2. Of, pertaining to, or making up a maximum: *a maximum number in a series*. [*< Lat.*, neuter of *maximus*, greatest. —see **MAXIM**.]

**maxixe** (mák'shësh', shësh'a) *n.* A Brazilian dance similar to the two-step. [Port. (Brazil).]

**maxwell** (mák'swel', -wl') *n.* A unit of magnetic flux in the centimeter-gram-second electromagnetic system, equal to the flux perpendicularly intersecting an area of one square centimeter in a region where the magnetic induction is one gauss. [After James Maxwell (1831-1879).]

**may** (mä) *aux.v.* Past might (mít). present may for singular and plural. 1. To be allowed or permitted to: *May I take a swim?* *You may.* 2. Used to indicate a certain measure of likelihood or possibility: *It may rain this afternoon.* 3. To be obliged; must. Used in statutes, deeds, and other legal documents. 4. Used to express a desire or fervent wish: *Long may he live!* 5. Used to express contingency, purpose, or result, in clauses introduced by *that* or *so that*: *expressing ideas so that the average man may understand.* —See Usage note at *can*. [ME, to be able < OE *mag*, 1st and 3rd person singular indicative of *magan*, to be strong, be able.]

**May** (mä) *n.* 1. The fifth month of the year according to the Gregorian calendar. See table at *calendar*. 2. The spring-time of life; youth. 3. The celebration of May Day. 4. *May. Chiefly Brit.* The blossoms of the hawthorn. [ME < OFr. *Mai* < Lat. *Maius* < *Maia*, an Italic goddess.]

**maya** (mä'yä) *n. Hinduism.* 1. The origin of the world. 2. The illusory appearance of the world. [Skt. *mäyä*.]

**Maya** (mä'yä) *n., pl. Maya or -yas.* 1. A member of a race of Indians in southern Mexico and Central America whose civilization reached its height around A.D. 1000. 2. The Mayan language of the Maya. [Sp.] —*Maya adj.*

**Mayan** (mä'yän) *adj.* Of or pertaining to the Mayas, their culture, their language or the language group to which it belongs. —*n.* 1. A Maya. 2. A linguistic stock of Central America that includes Maya and Yucatec.

**May apple** *n.* 1. A plant, *Podophyllum peltatum*, of eastern North America, having a single, nodding white flower and oval yellow fruit. Although the pulp of the ripe fruit is edible, the roots, leaves, and seeds of this plant are poisonous. 2. The fruit of the May apple.

**may-be** (mä'bë) *adv.* Perhaps; possibly.

**May beetle** *n.* The June beetle.

**may-day** (mä'dä') *n.* An international radio-telephone signal word used by aircraft and ships in distress. [Alteration of Fr. *m'aidez*, help me!]

**May Day** *n.* 1. The first day of May, marked by the celebration of spring. 2. May 1, regarded in a number of places as an international holiday to celebrate labor organizations.

**mayest** (mä'ist) or **mayst** (mäst) *aux.v. Archaic.* Second person singular present tense of *may*.

**may-flower** (mä'flou'är) *n.* 1. Any of a wide variety of plants that bloom in May. 2. The trailing arbutus.

**may-fly** (mä'flë) *n.* Any of various fragile, winged insects of the order Ephemeroptera that develop from aquatic nymphs and live in the adult stage for only a few hours.

**may-hap** (mä'häp', mä-häp') *adv.* Perhaps; perchance. [*< the phrase if may hap.*]

**may-hem** (mä'häm', mä'äm) *n.* 1. *Law.* The offense of will-

fully maiming or crippling a person. 2. The infliction of violent injury upon a person or thing; wanton destruction: *children committing mayhem in the flower beds.* 3. A state of violent disorder or riotous confusion; havoc. [ME < AN *mähem* < OFr. *mähaignier*, to maim.]

**may-ing** (mä'ing) *n.* Often *Maying.* The gathering of spring flowers, esp. during a May festival.

**may-n't** (mä'ënt, mänt) *May not.*

**may-on-naise** (mä'ë-näz', mä'ë-näz') *n.* A dressing made of beaten raw egg yolk, butter or olive oil, lemon juice or vinegar, and seasonings. [Fr.]

**may-or** (mä'ër, mär) *n.* The chief magistrate of a city, town, borough, or municipal corporation. [ME *maire* < OFr. < Med. Lat. *major* < Lat. greater. —see **MAJOR**.] —*may-or-al adj.* —*may-or-ship n.*

**may-or-al-ist** (mä'ër-ol-ëst, mär'ël-ëst) *n.* One who advocates direct revolutionary action to secure social and political gains. [Fr. *maximaliste*, prob. < E. *maximal*.]

**may-or-ally** (mä'ër-ol-ë, mär'ël-ë) *n., pl. -ties.* 1. The office of a mayor. 2. The term of office of a mayor. [ME *mairialie* < AN < OFr. *maire*, mayor. —see **MAJOR**.]

**may-or-ess** (mä'ër-ës, mär'ës) *n.* 1. A woman serving as the chief magistrate of a city, town, borough, or municipal corporation. 2. The wife of a mayor.

**May-pole** also **may-pole** (mä'pö'l) *n.* A pole decorated with streamers that May Day celebrants hold while dancing.

**may-pop** (mä'pöp) *n.* 1. A vine, *Passiflora incarnata*, of the southeastern United States, having purple and white flowers and edible yellow fruit. 2. The fruit of the maypop. [Alteration of *maycock* < Powhatan *mahcaw*.]

**may-st** (mäst) *aux.v.* Variant of *mayest*.

**may-tree** *n. Chiefly Brit.* The hawthorn.

**may-weed** (mä'wëd') *n.* A widespread weed, *Anthemis cotula*, having rank-smelling leaves and white flowers.

**May wine** *n.* 1. A still white wine with woodruff flavoring, often containing orange or pineapple slices. 2. A punch of champagne, claret, and Moselle or Rhine wine, flavored with woodruff. [Transl. of G. *Maievin*.]

**mazae-di-um** (mä'zë-dë-äm) *n., pl. -di-a (-dë-ä).* A fruiting body of some lichens in which the spores lie freely in a powdery mass that is enclosed in a peridium. [NLat. : Gr. *maza*, lump + Lat. *aedes*, house.]

**mazal tov** (mä'zäl töv) *interj.* Variant of *mazel tov*.

**Maz-dar-ism** also **Maz-de-ism** (mä'zë-dë-ëz'm) *n.* Zoroastrianism. [*< Avestan mazda*, the good principle.]

**maze** (mäz) *n.* 1. a. An intricate, usually confusing, network of walled or hedged pathways; labyrinth. b. A physical situation in which it is easy to get lost. c. Any of various networks of pathways, some blind and some leading to a goal, used experimentally to investigate learning in animals. 2. A graphic puzzle, the solution of which is an uninterrupted path through an intricate pattern of line segments from a starting point to a goal. 3. Something made up of many confused or conflicting elements; tangle. —*tr.v.* *mazed, mazing, mazes.* [Chiefly *Regional*. To stupefy; daze. 2. To bewilder. [ME *mase*, maze, confusion < *masan*, to confuse < OE *masian*, to confound.] —*maz'y adj.*

**mazel tov** also **mazal tov** (mä'zäl töv) *interj.* Hebrew. Congratulations. [Heb. *mazälôb* : *mazäl*, luck + *tôb*, good.]

**maz'er** (mä'zär) *n.* A large drinking bowl or goblet made of hard wood or metal. [ME < OFr. *mazre*, of Germanic orig.]

**mazourka** (mä'zür'kä, -zöör'-) *n.* Variant of *mazurka*. [mazur'ka (mä'zöö'kä, -zöör'-) *n.* Slang. Money; cash. [Yiddish *mazunen* < Heb. *mazun*, fixed.]

**mazur'ka** also **mazour'ka** (mä'zür'kä, -zöör'-) *n.* 1. A lively Polish dance resembling the polka, frequently adopted as a ballet form. 2. A piece of music for a mazurka, written in 3/4 or 3/8 time with the second beat heavily accented. [Pol., accusative of *mazurek*, dim. of *mazur*, some one from Mazovia, a province of Poland.]

**maz-zard** (mä'zärd) *n.* A wild sweet cherry, *Prunus avium*, often used as grafting stock. [Orig. unknown.]

**mbi-ra** (mä'bë-rä, -më-rä) *n.* A thumb piano. [Of Bantu orig.]

**MC** (mä'ës') *n.* A master of ceremonies.

**McCarthyism** (mä'kär-thë-ëz'm) *n.* 1. The political practice of publicizing accusations of disloyalty or subversion with insufficient regard to evidence. 2. The use of methods of investigation and accusation regarded as unfair, in order to suppress opposition. [After Joseph R. McCarthy. (1908-1957).] —*McCarthyist n.*

**McCoy** (mä'köi') *n. Slang.* The authentic thing or quality; something that is not an imitation or substitute. [*the real McCoy*. After Kid McCoy (Norman Selby, 1873-1940), American boxer.]

**McIn-tosh** (mä'ën-tösh') *n.* A variety of red eating apple, grown commercially in the northern United States. [After John McIntosh (fl. 1796), its first cultivator.]

**Md** The symbol for the element mendelevium.

**M-day** (äm'dä) *n.* Mobilization day; the day on which national mobilization for war is ordered.

**me** (më) *pron.* The objective case of the first person pronoun. Used: 1. As the direct object of a verb: *He assisted me.* 2. As the indirect object of a verb: *They offered me a ride.* 3. As the object of a preposition: *This letter is addressed to me.* —See Usage notes at *be* and *I*. [ME < OE *me*.]

**me-a cut'pa** (mä'ë kül'pä) *n.* An acknowledgment of a personal error or fault. [Lat., through my fault.]